This listing of claims will replace all prior versions, and listings, of claims in the application.

Listing of Claims:

1. (Currently Amended) A computerized method of optimizing properties of a magnetic core, the core having inner and outer radii and ~~wire~~ windings, the computerized method having computer-executable instructions for performing the following~~comprising the steps of~~:

a) allowing the inner and outer core radii to change parametrically in a nested loop;

b) computing core reluctance, number of turns, and winding resistance for each position;

c) computing ~~the~~ a maximum induced membrane voltage based on the following equation:

$$V_m(t) = f \sqrt{\frac{2W}{\Re} \omega \tau_L \left(4\omega^2 \tau_L^2 - 1\right)} \cdot$$

$$\frac{\left(e^{-\frac{t}{2\tau_L}} \cos(\beta) + \frac{e^{-\frac{t}{2\tau_L}}(2\tau_L \tau_m \omega^2 - 1)\sin(\beta)}{\sqrt{4\omega^2 \tau_L^2 - 1}} - e^{-\frac{t}{\tau_m}} \right)}{4\omega^4 \tau_m^2 \tau_L^3 + \omega^2 (4\tau_L^3 - \tau_m^2 \tau_L) + (\tau_m - \tau_L)} \quad ;$$

$$\text{where } \beta = \frac{1}{2} \sqrt{\frac{4\omega^2 \tau_L^2 - 1}{\tau_L^2}} \, t.$$

d) fitting ~~a~~ the maximum induced membrane voltage to the inner and outer core radii using a multi-variable spline analysis; and

e) using a variable metric sequential quadratic program algorithm to compute a value for the ~~combination of~~ inner and outer core radii that maximizes the ~~peak~~ maximum induced membrane voltage.

2. (Original) A method according to Claim 1 further comprising the step of:

f) repeating step e) with a Monte-Carlo starting guess algorithm,

wherein said step f) insures that a global maximum is found.

3. (Original) A method according to Claim 1, wherein said method is performed with a preselected wire size.

4. (Original) A method according to Claim 1, further comprising the initial step of selecting a wire size.

5. (Original) A method according to Claim 2, further comprising the initial step of selecting a wire size.

6. (Original) A method according to Claim 4, further comprising the steps of:
   g) selecting different wire sizes, and
   h) repeating steps a-f for each different wire size selected.

7. (Original) A method according to Claim 5, further comprising the steps of:
   g) selecting different wire sizes, and
   h) repeating steps a-f for each different wire size selected.

8. (Original) A method according to Claim 6, further comprising the step of:
   i) selecting the wire size which maximizes the membrane voltage.

9. (Original) A method according to Claim 7, further comprising the step of:
   i) selecting the wire size which maximizes the membrane voltage.

10. (Canceled).

11. (New) A method according to Claim 1, further comprising manufacturing a magnetic core.